

The Impact of Proton Pump Inhibitors on Cardiovascular-Related Event Costs in Patients Using Clopidogrel

Based on an abstract by researchers at Medco Health Solutions, Inc.; presented May 18, 2009, by Ronald E. Aubert, Ph.D., at the 14th Annual International Meeting of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR)

Background

Clopidogrel, also known by its brand name *Plavix*®, is the most commonly prescribed antiplatelet medication in the U.S. Many patients taking clopidogrel are also prescribed proton pump inhibitors (PPIs) to prevent bleeding complications. However, recent studies have shown that PPIs diminish the effectiveness of clopidogrel by inhibiting the ability of the P450 2C19 enzyme to convert clopidogrel into its active form and therefore raise cardiovascular risks. This study examines the costs associated with cardiovascular events among patients taking clopidogrel and PPIs compared with patients on clopidogrel alone.

Data and Methods

Our analysis was based on medical and pharmacy data from the National Medco Integrated Database, which contains claims from approximately 19 million people. We retrospectively analyzed 16,690 patients who had undergone coronary stenting between October 2005 and September 2006 and who were adherent and persistent to prescribed clopidogrel over the following 12 months. Subjects were divided into two cohorts – those taking clopidogrel alone (n=9,862) and those concurrently taking it with a PPI (n=6,828). We followed the outcomes of these patients over a 12-month period and analyzed the incidence of hospitalization or death from a major cardiovascular event including myocardial infarction/unstable angina (MI/ACS), stroke/transient ischemic attack, percutaneous coronary intervention/coronary artery bypass graft (PCI/CABG), and resuscitated cardiovascular death. The annual per patient costs (in 2009 U.S. dollars) for cardiovascular events were calculated using reference data from the Healthcare Cost and Utilization Project (HCUP).

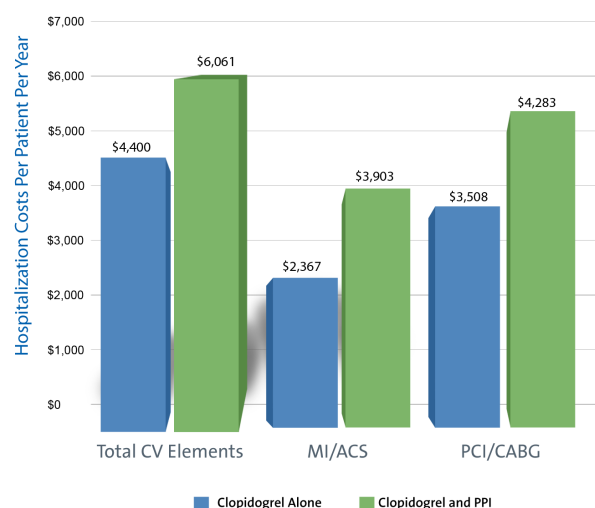
Results

The use of PPI therapy in conjunction with clopidogrel significantly increased the cost of care. During the 12-month study period, 25.1% of patients taking clopidogrel and a PPI experienced a major cardiovascular event as compared with 17.9% of patients who were only using clopidogrel. Related hospitalization costs amounted to \$6,061 annually per patient for those on combined clopidogrel-PPI therapy, 38% higher than the \$4,400 incurred by patients taking only clopidogrel. The greatest cost differences were related to hospitalization for MI/ACS, with attributable costs 65% higher for those on clopidogrel and PPIs as compared with the clopidogrel-only group.

Discussion

Our research previously found that the use of PPIs in conjunction with clopidogrel substantially raises the risk of cardiovascular events. Using the same initial study group to examine the impact on cost, we have now shown that due to the higher number of and type of hospitalizations from cardiovascular events, patients using both PPIs and clopidogrel have significantly higher event-related costs than patients on clopidogrel who are not using PPIs. The annual cost difference was \$1,662 per patient, a figure that is likely conservative, considering that our study evaluated only the first incidence of a cardiovascular-related hospitalization over the course of a year, while in some cases patients may have experienced additional adverse CV events and hospitalizations. Given that clopidogrel is one of most widely prescribed medications and is commonly taken with PPIs, the potential for excess costs stemming from this drug interaction on a national scale are considerable.

Hospitalization costs for patients on clopidogrel alone vs clopidogrel and a PPI



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